

### **Remarks**

Claims 5 - 21 are pending. Favorable reconsideration is respectfully requested.

Claims 5 - 18 have been rejected under 35 U.S.C. § 112 ¶2, and the claims have been rewritten to overcome these rejections. The claims have also been amended to recite the hyphenated form of "high-shear" throughout, and to make certain changes with regard to grammar or style. Withdrawal of the rejections of the claims under 35 U.S.C. § 112 ¶2 is respectfully solicited.

Claims 5 - 6, 9 - 10, 12, 14, and 16 - 18 have been rejected under 35 U.S.C. § 103(a) over Cook et al. U.S. Patent 4,908,154 ("*Cook*") in view of Joffre et al. EP 0915122 ("*Joffre*"). Applicants respectfully traverse this rejection.

*Cook* teaches a method of microemulsion preparation by the very high pressure impingement mixing of an oil phase and a polar (water) phase to form a microemulsion. At column 1, line 64 to column 2, line 31, *Cook* indicates that prior techniques using rotating mixers are not capable of improving stability of microemulsions, even by putting more work (energy) or emulsifier into the system. Thus, *Cook* teaches away from using rotating mixers, and instead proposes the use of a high pressure impingement mixer. This type of mixer is claimed not to increase the temperature of the emulsion, *i.e.* the temperature cannot be regulated by the mixer itself. Column 2, lines 50 - 53. Rather, to adjust temperature, *Cook* proposes to recycle a portion of the emulsion to a holding tank, where it can be recirculated or not by operation of a two-way valve. The pressure can be controlled in this way as well, according to *Cook*, although he does not state how this is accomplished.

In the present invention, emulsions are produced in a series of at least two rotating high-shear mixers, the temperature and pressure of the emulsion being measured upon exit from each of the mixers, and the process parameters adjusted to maintain the temperature and pressure at respective set points following the mixers.

The process of *Cook* uses but a single mixer, and this is an impingement mixer, not a rotating mixer. *Cook* teaches away from using rotating mixers. Teaching away is strong evidence of non-obviousness, and the rejection should be withdrawn for this reason alone.

However, the apparatus of *Cook* is absolutely incapable of meeting the claim limitations, since only a single mixer is involved, and therefore the set points cannot be measured after both the first and second mixers; there is no second mixer. The recycle of emulsion back into the *Cook* impingement mixer is not equivalent, since only one set of set points is involved, not two. Recycle may be used to alter the temperature (and pressure?) in the system, but there is only one temperature and one pressure, since there is but one mixer.

*Joffre* only establishes a set point with respect to requiring that the temperature of his process be kept below 60°C. The reason for this is that the emulsions of *Joffre* contain an oxime crosslinker which will crosslink with the silanol-stopped organopolysiloxane at elevated temperature. *Joffre* does not teach or suggest monitoring temperature and pressure after both the first mixer (*Joffre's* second mixer) and second mixer (*Joffre's* third mixer). Rather, *Joffre* measured the temperature (and never the pressure), at only the exit of his device.

It would not be obvious, in view of *Cook's* teaching against the use of conventional mixers, to replace *Cook's* single impingement mixer with two conventional mixers, and even were there motivation to do so, *Joffre* does not teach measuring the temperature and pressure at the exit of both first and second mixers, but only measures the temperature at the end of his process, at the exit of the second mixer.

To accentuate the considerable differences between the *Cook* process and that of Applicants, *Cook* requires a minimum pressure of 4000 psi (280 bar), while Applicants prefer pressures in the range of 1 to 10 bar. Yet Applicants, at this very low pressure, are able to produce stable emulsions. Separately with regard to claim 6, *Cook* does not teach regulating the pressure after the second mixer, particularly in the holding tank 31. The only pressure measurement in *Cook's* process is pressure gage 29, which, as described in column 6, lines 34 -

38, measures the pressure after high pressure pump 26 and performs this measurement "in the inlet lines leading to the nozzles, *i.e.*, just prior to formation of the interacting jets." Thus, *Cook* does not teach measuring pressure after any mixing device, and *Joffre* never measures pressure at all.

With respect to claims 9 and 10, *Joffre* does not teach that the temperature is regulated by adjusting the temperature of the raw materials. Paragraph [0037] only indicates that the temperature upon exit should be below 60°C, 50°C, or 40°C, but does not indicate how this should be accomplished, and in paragraph [0046], the temperature of the feed materials was 25°C, as in the other examples, and "[t]he temperature of the resulting latex was not measured."

For all these reasons, withdrawal of the rejection of the claims over *Cook* in view of *Joffre* is respectfully solicited.

Claims 7 - 8 and 11 have been rejected over *Cook* in view of *Joffre* further in view of *DesMarais et al.* U.S. Patent No. 5,250,576 ("*DesMarais*"). Applicants respectfully traverse this rejection.

*Cook* teaches away from the use of both dynamic and static mixers, and *DesMarais* requires both of these for his process. As indicated previously, despite *Cook* teaching away from the use of two rotating mixers, neither *Cook* nor *Joffre*, nor *DesMarais* teach measuring the pressure and temperature after both of the respective mixers. *DesMarais* only teaches that temperature should be kept within a certain range - he does not establish any set points. *DesMarais* is completely silent about temperature after his static mixer.

*DesMarais* also teaches away from the claimed invention by requiring that his second mixer be a static mixer. Neither the pressure of the first or second mixer of *DesMarais* can be controlled. The first mixer is operated at atmospheric pressure in a simple mixing tank, and the effluent from this tank flows by gravity to the static mixer. The pressure in the first tank cannot rise higher than atmospheric regardless of mixing speed (rotational speed), and the static

mixer is static, it has no moving parts. Hence the pressure cannot be varied by altering the speed of the mixer - it has no speed.

Withdrawal of the rejection of claims 7 - 8 and 11 under 35 U.S.C. § 103(a) over *Cook*, *Joffre*, and *DesMarais* is respectfully solicited. None of the references teach or suggest the claimed invention, whether alone or in combination.

Claims 13 and 15 have been rejected under 35 U.S.C. § 103(a) over *Cook* in view of *Joffre* further in view of Hager et al. U.S. Patent 6,492,459 ("*Hager*"). Applicants respectfully traverse this rejection.

Claims 13 and 15 require independent adjustment of pressure (claim 13) and temperature (claim 15). As indicated previously, neither *Cook* nor *Joffre*, alone or in combination, disclose, teach or suggest these limitations, and as *Hager* adds nothing to the deficiencies of *Cook* and *Joffre*, the rejection should be withdrawn for this reason alone.

*Hager* does not disclose a continuous process for preparing silicone emulsions. Rather, the processes disclosed by *Hager* are two stage batch processes, in which emulsifier mixture, water, and silicone are first blended, and then the emulsion thus formed is blended with silane in water. *Hager* does not teach or suggest a continuous process, and does not teach set points for either temperature or pressure. The portion of *Hager* cited by the Office merely indicates that the ambient temperature and pressure are atmospheric (1 bar) and 20°C, but does not indicate what the temperature or pressure following the mixers are. *Hager* states "or at a temperature which is established on combining the reactants at room temperature without additional heating or cooling." *Hager* teaches no set points. The comment regarding *Joffre* must be set in context: *Joffre* measures the temperature (40°C) in paragraph [0042] only after the final mixer. *Joffre* does not teach or suggest measuring the temperature at any other point, nor can the 40°C exit temperature be regarded as a "set point": it is merely the temperature which "happened."

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Withdrawal of the rejection of claims over *Cook*, *Joffre* and *Hager* is respectfully solicited.

Applicants submit that the claims are now in condition for Allowance, and respectfully request a Notice to that effect. If the Examiner believes that further discussion will advance the prosecution of the Application, the Examiner is highly encouraged to telephone Applicants' attorney at the number given below.

Please charge any fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978.

Respectfully submitted,

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